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ABSTRACT

The authors state that this monograph provides information on how teachers and other school officials may assist students to score better on tests. The emphasis is on the development of test-taking skills, rather than on cognitive development. The contents include: (1) matching objectives, instruction, and testing; (2) assessment and test anxiety; (3) testwiseness and pupil achievement; (4) improving test scores by guessing; and (5) a selected bibliography. (PN)

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IMPROVING TEST-TAKING SKILLS

by

Jerry A. Summers

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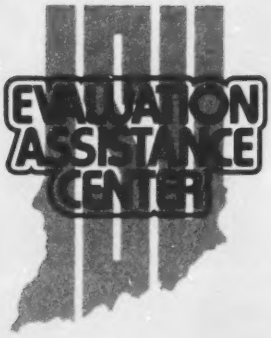
IMPROVING TEST-TAKING SKILLS



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INTRODUCTION

Tests and testing programs have been attacked with enthusiasm in recent years. Critics have pointed with zeal to the spiraling costs associated with standardized test administration and scoring, the lack of test reliability in prediction, the gross misuse of test results, the cultural discrimination of widely used tests, the shrinking time for teaching on task, and the complexities and confusions involved with the interpretation of test results.

Indeed, each of these criticisms is valid in a given instance. Strong advocates of measurement and evaluation can probably identify even more misuses of tests than most critics can. However, the fact remains that tests are likely to be associated with educational institutions for some time to come. It is unlikely that lawyers will give up their entrance examinations to the American Bar Association. It is unlikely that physician will allow members to enter their profession without some kind of examination which reveals, however blemished with individual unreliability, the talents of the physician candidate necessary for conducting the business of medicine.

The temptation to turn to tests to measure individual readiness or achievement is actually growing on the American educational scene. Teachers, in increasing numbers, are being required to pass some kind of examination--competency-based, standardized, or performance-oriented--before they are permitted to enter their profession. Students will undoubtedly continue to be required to take tests of all kinds in the future. It is unlikely that the number and/or importance of tests will be diminished. Tests will be used to make important decisions in the life of the student: the grades he makes, the educational group to which he is assigned (and therefore the persons with whom he associates), his readiness for advancement or promotion, his acceptance in special programs, or even his participation in extracurricular activities.

Tests come in many shapes and sizes. They may take the form of an informal teacher observation using a rating scale or checklist, a performance appraisal, a teacher-made classroom pencil-and-paper quiz, or a formal, standardized published test administered under strict guidelines. Even the type of test varies. It may be true-false, multiple-choice, completion, matching, computational, or essay. Tests also vary in frequency. The test may be an unannounced surprise quiz, a progress quiz, a term or semester final, or a once-a-year standardized achievement or aptitude test. It may be given to determine course direction (formative evaluation) or to measure attainment of course objectives (summative evaluation). Tests may be given to measure mastery of content area, determine remediation strategies, or compare students in a class.

Testing has become big business. Standardized testing alone is an annual multimillion-dollar industry in the United States. James Guines, Associate Superintendent for Instruction in the Washington, DC, schools, has been quoted in an interview as saying, "There's probably a bigger lobby to protect tests than there is to protect handguns and rifles" (Gifford & Fluitt, 1978, p. 53).

Logic dictates that the student who scores higher on tests will have more opportunities made available to him than will the student who scores

lower on tests. The decision as to whether or not a student is accepted to law school, gets into the college of his choice, or makes the honor roll could be based upon a very small difference in test scores. Presumably, two students of equal talents would score roughly equally on a test that is designed to measure those talents. However, such assumptions are rarely verified in practice. It is more probable that two students of roughly equal talents would have unequal test scores on a test designed to measure those talents. The reasons for the difference, however small, may be attributed to a number of factors:

1. The two students may have had different perceptions of the objectives of the class. The relationship between what was taught and what was supposed to be taught may or may not have been directly associated with what was assessed.

2. The two students probably entered the testing situation with not only different states of readiness, but also different levels of test anxiety. The resulting emotional states may have affected each student's performance on the test in different ways.

3. One student may have had more experience taking tests. Presumably this experience will provide that student with greater skill in "testwiseness," the ability to take tests.

4. One student may have been better prepared in the "art of guessing." He may have been more aggressive and knowledgeable about how to guess with maximum proficiency in order to obtain the higher test score.

The purpose of this publication is to provide information on how teachers and other school officials may assist students to score better on tests. Whereas there is no substitute for the "well-filled mind," the emphasis in this monograph is on the development of test-taking skills rather than on cognitive development. If a student's score on a test can be affected by his perceptions of instructional objectives, his level of test anxiety, his ability to guess, or his experience in taking tests, then it should be desirable to minimize these differences for all pupils so that scores on tests are more comparably representative of knowledge in the content areas and not other spurious student talents in the science of test-taking.

If test scores were more representative of actual pupil performance, then all educational groups would benefit. Teachers would have more confidence in test scores and would therefore be more inclined to use them for the classic beneficial purposes (remediation, counseling, etc.), patrons would have a more accurate perception of the performance levels of students and schools, and administrators and teachers would be more effective in evaluating school curriculum in order to further improve pupil performance. Further, students may benefit immensely from even a slight advantage in taking tests. A difference of one or two points for a given student on a given test could make a difference as to whether that student is accepted by the college of his choice, receives a scholarship, or is permitted to practice his chosen profession. Clearly, a student who is gifted in test-taking skills has an advantage over the student who is not.

MATCHING OBJECTIVES, INSTRUCTION, AND TESTING

The ideal teaching model calls for a strong relationship among the classical members of the teaching triad: objectives, instruction, and testing. This model suggests that if teachers teach and test their planned objectives, then measures of pupil achievement will have greater validity. Unfortunately, the simple logic of the model is not as easy to realize as might be assumed.

If each of the members of the triad is represented by a circle in the Venn diagram shown in Figure 1, then the concept of dissonance can be introduced to represent the extent that educational planners are on target.

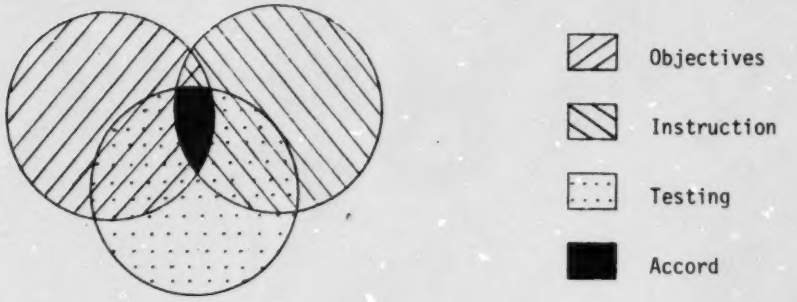


Figure 1. Dissonance model for explaining harmony or dissonance between objectives, instruction, and testing.

The model in Figure 1 illustrates dissonance between objectives, instruction, and testing. The aim of the diagram is to show that sometimes objectives are neither taught nor tested; sometimes instruction is neither planned nor tested; and sometimes test items are neither planned nor taught. The circles can be juxtaposed in different ways to represent greater or lesser degrees of accord.

The logic of the objectives/instruction/testing dissonance model is straightforward: Measures of pupil achievement will be more valid if the elements of the triad are in harmony with each other. Some critics would doubt that professional educators would allow a great amount of dissonance to occur. Actually, when the elements are examined, it is probably of greater difficulty to understand how they would be in harmony at all.

Identifying Objectives

Who identifies objectives for a class? The teacher? The state department of public instruction? Curriculum specialists? Curriculum committees? Textbook companies? College professors? School administrators? Testing companies? Students? State legislators?

Almost every school in the United States has a different technique for establishing educational objectives. Almost every power or pressure group that exists would like to control some aspect of school curriculum. A strongly centralized state will have a state curriculum guide which contains both general and specific objectives for almost every subject matter area or grade level. In some systems, for example, a teacher is required to be on "page 302, paragraph 52, on the 37th day of the school year." Arguments have been advanced that such uniformity minimizes interruption of study when a student transfers from school to school within a district. In very few instances (none that these writers can identify) can the teacher assume absolute responsibility for establishing objectives for a class.

Instruction

The task of determining how an objective is taught is generally given to the classroom teacher. However, classically, students have a way of modifying progress toward objective attainment. A variety of other factors also may modify the implementation of stated objectives: guest speakers, student ability, convocations, school cancellations, etc.

Teacher choice, or academic freedom, has long been revered as a sacred "given" in teaching; it definitely has a consequence or major import in objective attainment. Further, some curriculum planners state that students should have a voice in not only what is taught, but how it is taught.

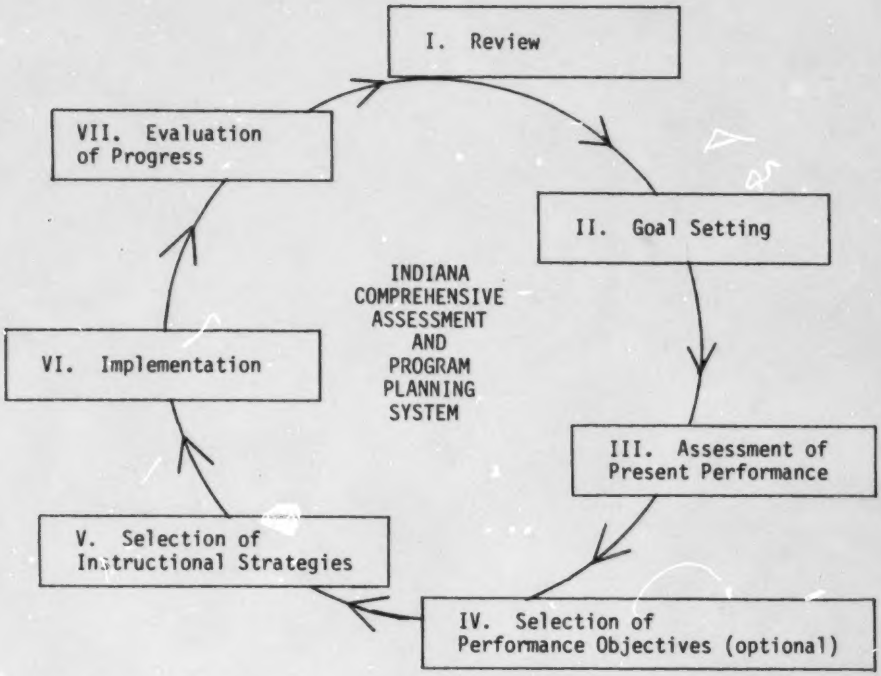
Many school systems may have a problem with dissonance between the development of objectives and instruction. This is particularly true when objectives are created by the state, curriculum committees, or other administrators and the teacher is not directly involved in the deliberations. As a general rule, *the more directly involved the teacher is in determining classroom or curricular objectives, the smaller the amount of objective/instructional dissonance.*

Testing

Now comes the rub! Practically every school system in the nation provides for some type of comprehensive achievement assessment, a summative experience using some standardized test. Presumably these tests are based upon the objectives that have been stated within a specific school system and the instruction that the students have received; they reflect both the level of student achievement and the quality of instruction that has been provided the students.

A State Model for Dissonance

In 1978 the Indiana Department of Public Instruction (IDPI) implemented the Comprehensive Assessment and Program Planning System (CAPPS). This mandate was made in the form of promulgated rule and followed a classic curriculum development model (see Figure 2). "A Guide to Essential Steps in a Comprehensive Assessment and Program Planning System" accompanies the model and is presented in Figure 3. The model is presented here because it provides a classic example of dissonance.


I. Review
II. Goal Setting
III. Assessment of Present Performance
IV. Selection of Performance Objectives (optional)
V. Selection of Instructional Strategies
VI. Implementation
VII. Evaluation of Progress
INDIANA COMPREHENSIVE ASSESSMENT AND PROGRAM PLANNING SYSTEM

I. Review

Review present program

II. Goal Setting

Identify overall corporation goals

Identify main topics of program

Set program goals

Adopt program objectives

III. Assessment of Present Performance (Needs Assessment/Diagnosis)

Assess present performance of students

Identify the gap between *what is desired* (program objectives) and *what is* (present performance)

IV. Selection of Performance Objectives (optional)

Identify performance objectives

V. Selection of Instructional Strategies

Identify teaching/learning activities

Identify needed personnel, materials, services and their costs

Select appropriate instructional/organizational strategies

VI. Implementation

Implement strategies

Monitor implementation

VII. Evaluation of Progress

Evaluate student progress

Figure 2. The IDPI CAPPS Model. (From *CAPPS: A Guide for Basic Skill Development*, 1979, p. 5.)

1. Form *local advisory committee* including teachers, administrators, parents and community members.

2. Review goals, organization and *scope of present program* in subject area to be assessed.

3. Develop a *timeline* for program implementation.

4. Have local advisory committee review and recommend corporation *goals* and *objectives* in subject area for all grades.

5. Establish *local standards* of student performance.

6. *Assess present performance* of students in grades 3-6-8-10, or a comparable grade sequence, to identify the gap between program objectives and student performance.

7. (Optional) Have local school personnel establish *performance objectives*. If necessary, provide inservice help for teachers in the writing of performance objectives.

8. Have teachers develop and organize appropriate learning activities and *instructional/organizational strategies* based on the objectives, including organizational systems and classroom management. If necessary, provide inservice training for teachers appropriate for individualizing instruction.

9. Have local school personnel *implement* the strategies, making adjustments where desirable. If necessary, provide inservice training for teachers in record-keeping procedures.

10. Evaluate *pupil progress* at grades 3-6-8-10, or a comparable grade sequence, using both a testing program and other assessment measures.

11. Develop and implement a system for *reporting to parents* that will help parents assist in the education of the child. Encourage parents and teachers to participate in developing the system.

12. *Report to state* on program plan.

13. *Report to state* on student progress.

Figure 3. A Guide to Essential Steps in a Comprehensive Assessment and Program Planning System. (From *CAPPS: A Guide for Basic Skill Development*, 1979, p. 7.)

It is significant to note the conditions for dissonance in the CAPPS model. The determination of objectives, although essentially a "local" responsibility, is made by a committee. The teacher may or may not be involved in the discussions; in a larger school system the chance of direct teacher participation is greatly reduced. It is of interest to note that when several teachers in one system were asked by these writers about the CAPPS objectives, after four years of implementation, they had neither seen nor heard about the mandated local objectives. This school system was fairly large, but the lack of program implementation was astonishing in light of the fact that teachers, given direct responsibility for teaching these specific objectives in their classes, had not been given a copy of them. The teachers who were questioned, incidentally, were neither beginning teachers nor teachers new to the system.

Dr. Robert O. Williams, Professor of Education at Indiana State University, reports (1982) that in his evaluative investigation of a school system implementing the CAPPS program, only a minority of teachers knew that locally established objectives had been adopted and that they, the teachers, were required to teach them. Further, most teachers were not even aware of the curriculum mandate.

These were not isolated incidents. Vast numbers of teachers across the United States have had similar responsibilities, but *in the absence of direct supervision by an appropriate curriculum director or administrator there is serious doubt that mandated objectives have any major impact upon instruction.*

Other evidence has been gathered to test the dissonance model in Indiana. Locally established social studies objectives in one school system were compared with the summative evaluative instrument, a standardized test. The purpose of the investigation was to determine if the items on the standardized testing instrument correlated with the stated objectives. The investigation revealed that only about one-third of the items on the standardized test were included among the locally established objectives (Evaluation Assistance Center, 1980). The obvious counterpart of this is that about two-thirds of the items on the standardized test were therefore not stated as objectives and presumably *not taught in class*, yet the students were held accountable for these non-taught objectives. Further, the results of this assessment were used in an annual report to the School Board to provide evidence of instructional effectiveness. Reports were also sent to the parents of each student providing information relative to local and standardized norms; comparative data was shared with parents in order to show them how their child compared with other children in the community and the nation. The tests were probably used in significant other ways having to do with counseling, grouping, etc.

Again, this is not an isolated incident. Although every school system in the State of Indiana was required by law to establish local objectives and to test their attainment, an average of 94.8 percent of the school systems reported using a published norm-referenced reading test (Gray, Williams, Lane, Smith, & Olshavsky, 1981, p. 88). This is, indeed, quite peculiar.

Objectives must be addressed in the classroom if they are to have meaning, and the results of that instruction should be assessed in order to reduce the dissonance in the objectives/instruction/testing model.

Minimizing Objectives, Instruction, and Testing Dissonance

Several curriculum development models exist which would reduce instructional dissonance. However, the following recommendation is made in order to have minimum dissonance: *Adopt the objectives that are given for the selected standardized tests, provide specific instruction which is aimed to facilitate attainment of these objectives according to the Teachers' Manual for Test Administration, and then test accordingly.* Such a development would have several other beneficial outcomes:

1. The model capitalizes on the professional expertise of the multimillion-dollar testing industry in developing viable instructional objectives.

2. Instructional strategies and teaching hints are provided in the instruction booklets for most standardized tests of educational achievement. Such strategies also help to minimize dissonance.

3. Because standardized tests frequently utilize higher-order test items, objectives and instruction based upon these items would similarly be expected to involve higher-order curriculum strategies. Such strategies upgrade the quality of instruction for many classrooms, and they provide students with greater value to their efforts of learning.

4. Pupil achievement would be measured with significantly greater validity. School boards, patrons, and other interested parties could, therefore, find greater meaning in the testing results.

5. Pupil achievement would, in all probability, be enhanced

Causes of Test Anxiety

Many pupils naturally fear taking tests. This fear is often manifested by actual physical illness prior to a test. Sometimes the effects are more subtle, but they can be detected by electronic recording equipment, which measures physiological consequences of test anxiety, or by self-reports or questionnaires, which measure cognitive and psychological factors.

High test anxiety has been attributed to a variety of causes. Contemporary research reports associations with expectations of parents or teachers; associations of grades with personal worth; fear of alienating parents, family, or friends; or a feeling of lack of control over one's life (Leffingwell, 1980). Increased levels of test anxiety have been consistently associated with personally devaluative and disparaging thoughts (Nunn, 1979). The prevailing view that describes test anxiety as "only a psychological problem" has been challenged; teachers may, in fact, cause high anxiety by continuing the struggle to maintain power over students (Carr, 1977).

Whatever the cause of high test anxiety, the research evidence clearly shows that it is related to poor test performance (Culler & Holahan, 1980). Couch (1979) reported that a student who is experiencing high test anxiety has mental interruptions to the task at hand; he has fixated thinking about previous mistakes, self-criticism during the examination, doubts about his academic ability, low academic self-perception, and poor use of mental imagery during examinations.

Both high and low achievers experience high test anxiety. High achievers frequently place additional unrealistic and illogical demands upon themselves. Low achievers sometimes fear tests because they regard them as one more attempt by the teachers to intimidate, embarrass, humiliate, or pass judgment on them. This fear, in part, is created by the pupil and his preparation for the test, his perception of what the test is intended to do, and his vision of how it will be used.

Experimental Attempts to Reduce Test Anxiety

Several attempts to reduce test anxiety have been successful and have been reported in the literature. Cohen (1981) describes attempts by the teacher to create different feelings toward tests and to make students aware that they are in charge of their own attitudes. In addition, students were given exercises in breathing, relaxation, and coping in an effort to reduce tension. Humor is also suggested as a way to reduce test anxiety.

Beneficial results have also been reported when training in relaxation is combined with imagery and practice examinations. Hudesman and Wiesner (1979) implemented a nine-session behavior modification program which was designed to relieve test anxiety; they provided instruction in muscle relaxation techniques followed by desensitization to 25 test-related, anxiety-producing items. An experimental group showed a significant increase in grade-point average when compared with a control group.

Classroom environments have also been associated with test anxiety. Costar (1980) experimented with test-taking atmospheres and discovered that a "comfortable" atmosphere produced a decrease in test-taking anxiety. These findings were reinforced by Bushnell (1978) who discovered that a teacher's careful manipulation of seating, classroom space, and room size could affect pupil achievement in a testing situation.

Many children feel anxious about taking a test, and too often it is the teacher who is responsible for the anxiety. Casual remarks, such as "This test is important, so you had better do your best on it" or "You failed the last test, so this is your final chance to get a passing grade in my class," create an atmosphere of fear, mistrust, and intimidation. This type of remark can affect the pupils' performance on a test.

Suggestions for Reducing Test Anxiety in the Classroom

To help reduce test anxiety and to create a positive mental and emotional state regarding tests, the following suggestions are given.

1. Prepare the students for the test. Let them know a test will be given.

2. Let the pupils know about the test: when it will be given, the content area to be tested, the number and type of test items, whether or not test items will be weighted, the amount of time allowed for the test, and how the results will be used.

3. Provide practice tests for the pupils to familiarize them with the testing format, directions, and possible use of answer sheets.

4. Discuss the purpose of the test with the students.

5. Assure the pupils that a little test anxiety can be a good thing; however, too much anxiety can interfere with satisfactory performance.

6. Encourage students to relax if they feel the pressure is getting to them. If the student believes he "can't think," he should be allowed, within reason, to stop working for a short period of time and attempt to regain his composure.

7. Advise students to get a good night's rest before a test. Staying up all night and cramming can exhaust an otherwise clear mind and diminish the ability to think through problems logically.

8. Discourage the use of stimulants and depressants. They are not positively associated with test achievement.

9. Advise students to come to class prepared for the test--academically and physically. It is a good idea for them to have more than one pen or pencil; this could result in saving valuable test time.

10. Discourage students from sitting near friends during the test.

11. As the rules of the test prevail, allow students to use aids such as calculators, dictionaries, textbooks, charts, tables, or scratch paper. Such information should be given to the students prior to the test.

12. Make sure seating arrangements are as comfortable as possible. Desks should be of the proper size and adequate for left- or right-handedness.

13. Lighting and ventilation should be normal for testing conditions and should not interfere with test taking.

In addition to the above suggestions, test anxiety can be further reduced and students can develop a more positive mental attitude toward testing if a program of test-anxiety desensitization is implemented. Such a program may amount to little more than the opportunity for students to experience many different types of tests under different conditions in the hope that they will accept testing as a non-threatening aspect of education. It may involve the liberal use of humor, or it may incorporate training in mental self-control. Many different programs have successfully reduced test anxiety. The teacher has a wide assortment of choices in this area.

TESTWISENESS AND PUPIL ACHIEVEMENT

Testwiseness has been defined as a subject's capacity to utilize the characteristics and formats of a test and/or the test-taking situation to receive a higher score than he would otherwise have obtained. It refers directly to the student's ability to identify and utilize the unconscious clues or signals that the test maker gives when he prepared the test items individually.

Attempts to Improve Testwiseness Skills

Research has indicated that some students already have testwiseness skills; others can be taught successfully to capitalize on reading the clues which the unwary test maker left behind and thereby raise their test scores. Indeed, students have been taught to use these skills fairly well even with standardized tests.

Petty and Harnell (1977) discovered that by providing both instruction in testwiseness skills and desensitization for test anxiety, IQ scores could be significantly increased. Students of lower general intelligence realized greater gains than did students with high IQs.

Callenbach (1973) demonstrated that standardized reading test scores of test-naive second-grade students could be significantly raised if the pupils were given instruction in test-taking skills. Practice was included as an independent variable in his investigation.

Present research suggests that testwiseness is not a general trait. It is clue-specific, and it can be learned. Further, remedial, developmental, and advanced readers may all prosper from instruction (Diamond & Evans, 1972).

An interesting study has been reported from private enterprise. A testwiseness skills program, *Mini Tests*, was developed by Educational Solutions, Inc., for the purpose of helping students develop testwiseness skills necessary for optimum performance on reading tests. The program consists of two sets of one-page worksheets; one set is designed to introduce testwiseness skills and the other provides practice in using them on materials similar to standardized reading achievement test items. As a preliminary assessment of the effectiveness of the tests, the materials were field-tested in the New York City schools in grades 2 through 9. The results indicated that those New York City elementary schools which utilized *Mini Tests* made more statistically significant gains in the number of students scoring on grade level than those schools not utilizing the tests (Montferrante, 1979).

Standardized test preparers go to great expense in testing items to assure that answer cues or test context clues are minimally given in their tests. Teacher-made tests, however, are generally not quite as carefully prepared; the teacher has neither the time nor the financing to assure that each test item is as pure as it could be. The alert test-taker could be programmed to take advantage of such clues wherever they occur.

Using Context Clues

Context clues appear in all kinds of tests--standardized and teacher-made. The alert test taker could use these clues to improve test scores even though the correct answer to the particular test item may not be known. Techniques for utilizing these clues are given in the following paragraphs.

Specific determiners are context clues which include words such as *always, never, usually,* or *seldom.* They are generally used in true-false statements, and their use has consistently been associated with specific answers. The uses of *always, all,* and *never* are more consistently associated with false statements, and the uses of *usually* and *seldom* are more consistently associated with true statements.

Example:	Answer:
1. Presidents of the United States are always selected on the basis of a majority vote of the people.	F
2. Elected presidents of the United States usually have the backing of a strong political party.	T

Detailed option responses are sometimes provided by test preparers to reinforce the accuracy of the correct option. Such options are usually provided for multiple-choice tests, and the correct response tends to be both longer and more detailed. In the absence of any other information, the student is advised to select this longer, more detailed response.

Example: Answer:

3. Harry S. Truman was president of the United States from 1945 until 1952. One of the more important events during his presidency was b

    a. The Afro-Asian Conference

    b. The explosion of the first hydrogen device at Eniwetok Proving Grounds, November 1, 1952

    c. Senator Strom Thurmond's record

    d. The first U.S. Satellite

Syntax hints are sometimes inadvertently given by the test writer and serve as a clue to the correct answer. Such hints may appear in almost any kind of test, and the uses of the word *a* or *an* are the clues most frequently given. Clearly, the use of *an* grammatically presupposes that the next word will begin with a vowel or vowel sound.

Example: Answer:

4. ANOVA is an acronym referring to a statistical procedure called an b

   a. coefficient of correlation

   b. analysis of variance

   c. t-test

   d. factor analysis

5. The Parthenon in Greece has been referred to as an _____ wonder of the ancient world 8th
   one-digit ordinal figure

In the above example, what other one-digit ordinal figure starts with a vowel or vowel sound?

Repetitions of root words are sometimes given in the stem of a multiple-choice item and therefore hint at the correct response. Options in which the root words are given tend to be the correct response more often than not.

Example: Answer:

6. A t-test for correlated samples is used when b

   a. there is absolutely no logical relationship between the observations in the two groups

   b. there is a correlation between the members of both groups

   c. the difference between the groups is great

   d. an analysis of variance statistical procedure is not possible

Option preferences are frequently hidden biases of test preparers. The letter *b* or *c* in multiple-choice tests is preferred by many teachers, but some teachers will consistently place correct options in the *a*, *d*, or *e* column. If a student knows the biases of his teacher or the test preparer, he can increase his odds of attaining a higher test score by carefully weighing the teacher's preferences in his response selection.

Pattern responses, either intentionally or accidentally, are sometimes used by test preparers; the responses are coded with repetitions of correct answers such as *a b c d*, *a b c d*. Such patterns sometimes make grading easier and the teacher uses them to simplify his work load. Sometimes a hidden bias causes the pattern response. If a student can identify the pattern response cycle, he may increase his score above what might be the case with pure cognitive knowledge.

Practice Test in Testwiseness

Directions: Each of the items listed below illustrates a concept of testwiseness. The examinee is asked to take the test and attempt to use testwiseness to determine the most likely answer. Use the key below to help determine the reason why each item could be answered correctly without cognitive knowledge. Correct answers are given at the end of the test.

Reason Key:

a. Uses specific determiners
b. Has detailed correct option response
c. Uses "b/c" preferences
d. Uses pattern responses
e. Gives syntax hints
f. Provides repetitions of root words

Item	Answer	Reason
1. The farmers of an ancient civilization in the central highlands of the Andes Mountains are reported to have been responsible for giving the modern world the potato. A member of this ancient civilization may be referred to as an a. Brazilian b. Incan c. Chilean d. Peruvian	___	___
2. Millard Fillmore served as President of the United States from 1850 until 1853. One of the more important events that occurred during his presidency was a. the construction of the clipper ship *Vantage* b. the publication in 1852 of *Uncle Tom's Cabin*, a dramatization of the plight of the Negro slave, by Harriet Beecher Stowe c. women's dress reform led by Amelia Skirt d. the development of the Kissimmee-Tampa cross-state railroad	___	___
3. Up until 1820, all British persons who immigrated into the United States were English. a. True b. False	___	___

4. A solution has been defined as a mixture of free and separate molecules of two or more different substances one of which is a liquid. The substance that is dissolved is called the solute; the liquid is called a(an) ____ ____

   a. molecule
   b. solvent
   c. mixture
   d. compound

5. A statue, entitled "Bound Slave," is now in the Louvre in Paris. It was sculpted by ____ ____

   a. Leonardo DaVinci
   b. Michelangelo Buonarroti
   c. Della Robbia
   d. Benvenuto Cellini

KEY:

Item:	Answer	Reason
1.	b	e
2.	b	b
3.	b	a
4.	b	f
5.	b	c

Testwiseness and Essay Tests

The art of taking tests may be extended to essay tests as well as to more objective-type tests. Clinton Chase, an Indiana University Professor of Educational Psychology, provides the following advice for a student taking an essay test: "Write sloppily if you're smart. Write neatly if you're not. Eschew $10.00 words and cumbersome phrases. And if your name is Bertha or Elmer . . . change it to Lisa or David" (p. 5). Dr. Chase reports that teachers are biased by penmanship, their expectations of the student, the pupil's name, and the complexity of the student's response. (Mitgang, 1982).

Cirino-Gerena (1981) sought to determine strategies used by students in answering essay test questions. He discovered that the strategy most commonly used was to express an opinion similar to the teacher's. This finding, according to the researcher, casts serious doubt on the assumption that essay tests provide opportunity for students to exercise creativity and critical thinking.

IMPROVING TEST SCORES BY GUESSING

Tests do not discriminate perfectly for pupil achievement. Some tests, in fact, are based on the presumption that the test taker will not "know" all the answers. This is particularly true in intelligence and aptitude tests. The more *intelligent* persons, or the ones with the greatest *aptitude* in a given area, are further presumed to be the ones who can use the skills they presently have to answer test items correctly even though they may not be armed with specific knowledge. If the examinee were to make an effort to understand the purposes of the test, to know the rules (or penalties for guessing), to be prepared to use logical reasoning, and to be willing to take a chance, he might be able to improve his test scores significantly on all kinds of tests.

Understanding Test Construction

Certain tests, especially certain kinds of intelligence tests, include novel, unique, highly specialized tasks, such as figure analogies and number series. For test problems of this character the main concern of the examinee is to "get the hang of" solving them. They do not reflect previous learning, nor is the skill developed in solving these test problems likely to be practically useful in other settings. Their use in intelligence testing is justified on the grounds that brighter students will "get the hang of" solving novel problems sooner and more fully than duller students (Ebel, 1965). Previous knowledge regarding the type of logic used in such tests, as well as practice in the use of such logic, could be very beneficial to the examinee. Many references are available which describe techniques for improving test scores on specific tests. Such practice may be of great value for the basic skill development of the learner for taking tests, and, indeed, the content of such references could make a valuable contribution to a school curriculum.

Aptitude tests also appear to utilize a unique type of logic. There are four types of questions in the verbal section of the SAT: 25 antonyms, 20 analogies, 15 sentence completions, and 25 questions based on reading passages. The antonyms usually take the least time, followed by analogies, sentence completion questions, and, finally, the reading comprehension questions. High-scoring students can do between 2 and 3 antonyms a minute, but the same students may take more than 7 minutes to read a 400-word passage and answer 5 questions on it (Educational Testing Service, 1979).

Antonym questions include words that high school students come across in their general reading, although some words may not be the kinds that are used in everyday speech. Hints for answering these items include:

1. Among the choices offered, look for the word that means the opposite of the given word.

2. Read all of the choices before deciding which one is *best*. Few words have exact opposites; find the word that is most nearly opposite.

3. Be flexible; a word can have several meanings.

4. Try putting the word in a sentence. If you don't know the dictionary meaning of a word but have a feeling for how the

word should be used, try to make up a short phrase or sentence using the word. This may provide a clue as to which choice is an opposite even though you may not be able to define the word precisely.

5. Answering antonyms depends on knowing the meanings and uses of words; therefore, memorizing word lists is probably of little use. Anything that helps you to think about words and how they are used improves verbal ability and is likely to improve performance on antonyms and other kinds of verbal questions. In preparation for the test, the examinee is encouraged to read carefully some moderately complex books or some good magazines on topics with which he is not familiar and to look up unfamiliar words in the dictionary. Do crossword puzzles or play word games.

Knowing Test Rules

Many tests and many teachers attempt to "correct" for guessing. A variety of formulas are used. However, ordinary guessing corrections really do not penalize even blind guessing; they simply seek not to reward it. Hence, test scores may be improved by attempting to answer all questions, even those for which there is only a *slight* basis for answering.

The examinee should become familiar with the scoring procedures for a test. If no penalty for guessing exists, then he is advised to "guess at will." However, when there is a penalty rule in existence, it is important to understand how guessing can affect a score and how to use guessing strategies advantageously.

The scoring procedures on the quantitative ability subtests of the SAT are made in such a way that haphazard or random guessing is unlikely to change a score. A certain fraction of wrong answers is subtracted from the number of correct answers to determine a score. However, when one or more choices can be eliminated from the option list, guessing from among the remaining choices could significantly improve a test score (Educational Testing Service, 1979).

Wild guessing, especially on the SAT math section, is discouraged. The examinee should attempt to solve the problems using sound mathematical reasoning. If he cannot solve a problem, he is advised to leave the answer blank. However, again, if some choices can be eliminated, the chances of guessing correctly are much improved.

Chance and Deductive Reasoning

You have been notified of the test, date, type of test, number of items, scoring procedure, and how the scores will be used. Now the anticipated moment has arrived. You have the test in hand and, prepared by good conscientious study habits and knowledgeable of content area and testwiseness skills, you are ready to begin. Fortunately many items can be answered correctly by knowledge of the subject matter. Still more answers can be correctly identified using testwiseness. However, some items remain for which you cannot immediately find a correct response. It is time to guess!

Pure guess, statistically, will have a 50 percent correct rate on a true-false test; there will be a 25 percent success rate on a four-option multiple-choice test. Assuming no penalty for guessing, a score will be increased significantly by simply "taking a chance." However, if a process of deductive reasoning is used, the correct answer rate may be improved still further.

Deductive reasoning on a multiple-choice test involves carefully reading the test item and each possible response to analyze what is being asked and then logically eliminating some of the responses; best reasoning is then used to select the *most* appopriate response from among those remaining. Clearly, the chances of choosing a correct answer will increase with every incorrect choice that is eliminated from among the alternatives. After choosing an answer, the examinee is advised to read the entire sentence to himself in order to make sure that it is logical. At least two studies have been reported which are interesting for an investigation on guessing. Bliss (1980) discovered that when students were discouraged from "guessing wildly" on a mathematics achievement test, the more able students had the greatest tendency to omit items. This finding has relevance because presumably those students who could probably do the best job of guessing were the ones who were most reluctant to use it.

Penfield and Mercer (1980) investigated the effect of changing answers on test scores. Their results indicate that when answers are changed, they are most often changed from incorrect to correct. This is contrary to some advice frequently given by teachers who have warned students never to change an answer. Further, the authors discovered that high-scoring students have a tendency to make more changes than low-scoring students.

REFERENCES

Bliss, L. A test of Lord's assumption regarding examinee guessing behavior on multiple-choice tests using elementary school students. *Journal of Educational Measurement*, 1980, *17*, 147-153.

Bushnell, D. *Altering test environments for reducing test anxiety and for improving academic performance.* March 30, 1978. (ERIC Document Reproduction Service No. ED 161 946)

Callenbach, C. The effects of instruction and practice in content-independent test-taking techniques upon the standardized reading test scores of selected second-grade students. *Journal of Educational Measurement*, 1973, *10*, 25-30.

Carr, R.A. *The politics of anxiety.* Paper presented at the annual meeting of the American Educational Research Association, New York, April 4-8, 1977. (ERIC Document Reproduction Service No. ED 144 959)

Cirino-Gerena, G. Strategies in answering essay tests. *Teaching of Psychology*, 1981, *8*(1), 53-54.

Cohen, R.I. *Reducing test anxiety: A right brain approach.* January 1981. (ERIC Document Reproduction Service No. ED 190 966)

Costar, E. Scoring high in reading: The effectiveness of teaching achievement test-taking behaviors. *Elementary School Guidance and Counseling*, 1980, *1*, 157-159.

Couch, J.V. *Test anxiety and academic achievement: A correlational analysis.* Paper presented at the Annual Convention of the Association for Behavior Analysis: International Organization, Dearborn, MI, June 1979.

Culler, R.E., & Holahan, C.J. Test anxiety and academic performance: The effects of study-related behaviors. *Journal of Educational Psychology*, 1980, *72*, 16-20.

Diamond, J.J., & Evans, W.J. An investigation of the cognitive correlates of test-wiseness. *Journal of Educational Measurement*, 1972, *9*, 145-150.

Ebel, R.L. *Measuring educational achievement.* Englewood Cliffs, NJ: Prentice-Hall, 1965.

Educational Testing Service. *Taking the SAT.* Princeton, NY: Educational Testing Service, 1979.

Evaluation Assistance Center. *Comparison of Iowa test items with locally established objectives: A case study.* Terre Haute: Indiana State University, 1980.

Gifford, C.S., & Fluitt, J.L. Test-taking skills and testwiseness. *The Clearing House*, 1978, *52*(2), 53-55.

Gray, M.C., Williams, R.O., Lane, K.R., Smith, V.A., & Olshavsky, J.E. *Curricular development in Indiana: Analysis of the C-1 Rule and CAPPS.* Terre Haute: Indiana Association for Supervision and Curriculum Research and Development Center, Indiana State University, 1981.

Hudesman, J., & Wiesner, E. Desensitization of test anxious urban community college students and resulting changes in grade point average. *Community College Research Quarterly*, 1979, *3*, 259-264.

Indiana Department of Public Instruction. *CAPPS: A guide for basic skill development* (Rev. ed.). Indianapolis: IDPI, 1979.

Leffingwell, J.R. *Reduction of test anxiety in students enrolled in mathematics courses: Practical solutions for counselors.* Paper presented at the Annual Convention of American Personnel and Guidance Association, Atlanta, March 1980.

Mitgang, L. IU prof gives advice for essay tests. *Terre Haute Star*, June 19, 1982, p. 5.

Montferrante, E.R. *Do the effects of testwiseness relate more to the achievement of remedial, developmental, or advanced readers?* Unpublished master's thesis, Kean College, 1979.

Nunn, G. *Test anxiety and perception of self: A correlational study.* September 1979. (ERIC Document Reproduction Service No. ED 169 510)

Penfield, D.A., & Mercer, M. Answer changing and statistics. *Educational Review Quarterly*, 1980, *5*, 50-57.

Petty, N.E., & Harrell, E.H. Effect of programmed instruction related to motivation, anxiety, and test wiseness on group IQ test performance. *Journal of Educational Psychology*, 1977, *69*, 630-635.

Williams, R.O. *A case study evaluation of implementing state mandated curriculum change.* Paper presented at the Annual Convention for the Association of Supervision and Curriculum Development, Anaheim, March 1982.

SELECTED BIBLIOGRAPHY

Dobbin, John E. *How to Take a Test.* Princeton, NJ: Educational Testing Service, 1979.

Downey, Gregg W. "Is It Time We Started Teaching Children How to Take Tests?" *The American School Board Journal* 164 (January 1977): 27-31.

Educational Testing Service. *A Little Anxiety: Test-Taking Skills.* Princeton, NJ: Educational Testing Service, 1981.

Hickey, Kevin S. "Anxiety and Test Performance." Paper presented at the 88th Annual Convention of the American Psychological Association, Montreal, September 1980.

Jones, John H. "How to Write Better Tests." *Instructor*, October 1979, pp. 65-71.

Kalechstein, Pearl; Kalechstein, Mel; and Doctor, Robert. "The Effects of Instruction on Test-Taking Skills in Second-Grade Black Children." *Measurement and Evaluation in Guidance* 13 (January 1981): 198-202.

Lindquist, E.F.; Hieronymus, A.N.; and Hoover, H.D. *Iowa Tests of Basic Skills: A Teacher's Guide.* Boston: Houghton Mifflin Co., 1980.

Rogers, George W., Jr. *Rationally Dealing with Test Anxiety.* February 1980. (ERIC Document Reproduction Service No. ED 179 149)

Sanacore, Joseph. "A SAT Preparatory Program That Works." *Educational Leadership* 39 (December 1981): 222-223.

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